SUMMARY
BIOLOGICAL OPINION ON THE EFFECTS TO THE RAZORBACK SUCKER FROM THE PROPOSED FOREST SERVICE REGION 3 CEDAR BENCH ALLOTMENT RANGE PERMIT ISSUANCE

Date of the opinion: September 8, 1995 2-21-95-F-291

Action Agency: U.S. Forest Service, Region 3, Tonto National Forest, Payson Ranger District

Proposed Action: The proposed action addressed in the biological opinion is issuance of the range permit under the current allotment management plan for the Cedar Bench allotment on the Tonto National Forest.

Listed species affected: Razorback sucker (*Xyrauchen texanus*).

BIOLOGICAL OPINION: Not likely to jeopardize the continued existence of razorback sucker. Not likely to destroy or adversely modify its designated critical habitat.

INCIDENTAL TAKE STATEMENT: Take would result from both harassment and harm but it is not possible to clearly define the extent of potential take to individuals. The Service concludes that the level of incidental take from the proposed action will be considered to be exceeded if riparian recovery is halted or significantly retarded by livestock use of the riparian zone.

REASONABLE AND PRUDENT MEASURES: Reasonable and prudent measures were provided requiring that livestock use of the riparian areas of the River Pasture be monitored and that, should monitoring demonstrate that livestock are congregating in the riparian areas of the River Pasture, measures will be taken to reduce or eliminate livestock use of these areas.

TERMS AND CONDITIONS: Non-discretionary terms and conditions were provided for each of the two reasonable and prudent measures and included for reasonable and prudent measure #1 periodic inspection of riparian areas and an end of the grazing season inspection. To implement reasonable and prudent measure #2, the term and condition provided requires the restriction of grazing in riparian areas by fencing, herding or other means if monitoring should determine such action is necessary.

CONSERVATION RECOMMENDATIONS: Three discretionary conservation recommendations were provided.

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September 8, 1995

In Reply Refer To:
AESO/SE
2-21-95-F-291

Mr. Charles R. Bazan
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Dear Mr. Bazan:

The U.S. Fish and Wildlife Service has reviewed the Biological Assessment and Evaluation submitted for the Cedar Bench Allotment Management Plan located on the Payson Ranger District of the Tonto National Forest in Gila County, Arizona. Your April 25, 1995, request for formal consultation was received on the same date. This document represents the Service's biological opinion on the effects of that action on razorback sucker (*Xyrauchen texanus*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

This biological opinion is based on information provided in the April 25, 1995, Biological Assessment and Evaluation (BAE), data in our files or in the published or grey literature, field investigations conducted on May 11 and 12, 1995, and other sources of information. The literature cited in this biological opinion does not represent a complete bibliography of all literature on the species discussed within the opinion or on the effects of grazing on these species.

CONSULTATION HISTORY

Consultation for the Cedar Bench Allotment and several other allotments along the Verde River was previously requested in a letter dated September 9, 1994. In a meeting on April 5, 1995, the Tonto NF and the Service determined that the Cedar Bench Allotment would be consulted on separately in order to ensure completion prior to permit expiration. It was also decided at that time to include within the consultation all endangered and threatened

species that occurred within the proposed project area. As noted above, the Tonto NF provided the Service with a BAE for the Cedar Bench Allotment Management Plan on April 25, 1995. Field visits were conducted with staff from the Tonto NF and the Service on May 11 and 12, 1995. An additional letter clarifying the Forest Service's determination of effects of the proposed action on southwestern willow flycatcher (willow flycatcher) was submitted to the Service dated August 17, 1995.

Early in 1995, the Regional Forester informed the Service that there were a large number of grazing permits that had to be issued by December 1995 for grazing allotments. In order to process this large volume of permits before existing grazing permits expired, the Regional Forester and the Service jointly developed a programmatic BAE for grazing activities. Pursuant to this BAE, dated April 7, 1995, a Forest would not be required to obtain concurrence from the Service for grazing permit issuance for certain species if their determination of effects to the species or its critical habitat was no effect or may affect, not likely to adversely affect and if criteria in the programmatic BAE were met. Since that time, an addendum was made to the programmatic BAE clarifying that consultation would not be required on actions within critical habitat for Mexican spotted owl if a Forest determined no effect or may affect, not likely to adversely affect on projects within critical habitat. On May 5, 1995, the Service concurred with conditions as requested in the BAE, by letter from the Service's Regional Director to the Regional Forester, Region 3.

Because the grazing permit to be issued for the Cedar Bench Allotment is due to expire in December 1995, section 7 consultation for the project is subject to provisions of the programmatic BAE, and determinations by the Forest of no effect or may affect, not likely to adversely affect do not require further Service concurrence. The Forest determined that issuance of the grazing permit for the Cedar Bench Allotment would have no effect on bald eagle, peregrine falcon, Mexican spotted owl or its critical habitat, Arizona agave, or Arizona cliffrose. The Forest further determined that the proposed action may affect but was not likely to adversely affect willow flycatcher or its proposed critical habitat. Pursuant to the programmatic BAE, these species will not be further addressed in this consultation.

Colorado squawfish in the proposed project area are considered a non-essential experimental population. Non-essential experimental populations that are not on a National Park or National Wildlife Refuge System unit are treated as a proposed species for purposes of section 7 consultation, and conferencing may be required if the project is likely to jeopardize the continued existence of the species. The Forest made the determination that issuance of the grazing permit for the Cedar Bench Allotment was likely to adversely affect Colorado squawfish within the proposed project area. After an analysis of the action under consultation, the Service agrees with the Forest's determination that the implementation of the proposed action is likely to adversely affect the Colorado squawfish, but it is not likely to jeopardize the continued existence of the species. Therefore, formal conference is not required. In accordance with the April 7, 1995, programmatic BAE, the May 5, 1995, Regional concurrence, and the Endangered Species Act (ESA), this biological opinion therefore considers the potential effects of the project on razorback sucker.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is issuance of a range permit for the Cedar Bench Allotment using the current Allotment Management Plan (AMP). The Cedar Bench Allotment is divided into 11 pastures including three shipping pastures, two bull pastures, two breeding pastures, and four general use pastures. The rest-rotation schedule developed in the AMP calls for use of approximately half of the allotment each year. Six pastures are used in even-numbered years and five pastures, including the River Pasture, are used in odd-numbered years. All pastures except the River Pasture receive winter use by 500 cattle between November 1 and May 31 of each year, or approximately 105,000 cattle-days (Forest Service 1995).

The River Pasture borders approximately 2.5 miles of the Verde River, less than 1.0 miles of Fossil Creek just above its confluence with the Verde River, and about 4.5 miles of the East Verde River, including its confluence with the Verde River. Use of the River Pasture is restricted to no more than 100 cattle from mid-November through mid-March, or 12,000 cattle-days. Cattle are released in the pasture at its highest elevations and continue grazing in a downslope pattern to the lower elevations. By late February or March, the majority of cattle begin returning to higher elevations. Prior to mid-March, the permittee opens the gates, allowing livestock to move into the next pasture. By mid-March, the permittee is required to remove any remaining cattle from the River Pasture (Forest Service 1995).

Of the three gathering/shipping pastures, two are used in the first year and the third is used the following year. These three pastures are approximately nine miles from the confluence of the East Verde and Verde Rivers and eight miles from the confluence of Fossil Creek and the Verde River. The Cedar Bench Allotment also includes nine tanks and two developed springs. These water developments are located on mesas above the Verde River. The nearest water developments to the confluence of the Verde and East Verde Rivers are one mile away (Forest Service 1995). A more detailed description of management activities and a map of the allotment may be found in the AMP and the BAE.

Access to the site is via State Highway 89 and Forest Route 194. Forest Route 194 is a four-wheel drive road that ends at private property in the upper elevations of the allotment. From that point, only Forest Trails 11, 14, and 17 provide access to Fossil Creek and the Verde and East Verde Rivers. These trails are largely unsuitable for motorized vehicles. The proposed action does not include upgrading or maintenance of these roads.

The Cedar Bench Allotment is located below the Mogollon Rim in the transition lifezone. The area is characterized by relatively flat mesas and steep, rocky, and deeply incised canyons. Vegetation communities represented include Great Basin conifer woodland, Rocky Mountain montane conifer forest, interior chaparral, and interior deciduous riparian woodland. The 32,000-acre allotment is bounded by the Deadman Allotment to the north, Hardscrabble Allotment to the east, the East Verde River to the south, and approximately

2.5 miles of the Verde River to the west. Rocky Mountain montane conifer forest is found along shallow drainages in the higher elevations of the allotment. This vegetation community is represented by a ponderosa pine (Pinus ponderosa) overstory with scattered alligator juniper (Juniperus deppeana) and Gambel's oak (Quercus gambelli) in the middlestory. Historically, vegetation on the mesas was considered semidesert grassland within a predominantly woodland community. However, the grassland has been transformed into Great Basin conifer woodland, which is represented by an association of primarily Utah juniper (Juniperus osteosperma) with an understory of mixed grasses including hairy grama (Bouteloua hirsuta), curly mesquite (Hilaria berlanderi), and spider grass (Aristida ternipes).

Where the mesas descend to the south and west, interior chaparral species are prevalent and include shrub live oak (Quercus turbinella) and mountain-mahogany (Cercocarpus montanus). In the western portions of the allotment and at lower elevations toward the East Verde and Verde Rivers, semidesert grassland and Sonoran desertscrub communities are dominant. The upper elevations of these zones support crucifixion thorn (Canotia holocantha) and mesquite (Prosopis velutina) along with junipers. On south-facing slopes above the East Verde River, the Sonoran desertscrub community is prevalent with species such as desert hackberry (Celtis pallida), foothills palo verde (Cercidium microphyllum), and saguaro cactus (Carnegia gigantea). In addition to those previously mentioned, grasses of these lower elevation sites include three awn (Aristida spp.) and foxtail (Bromus rubens).

The Cedar Bench Allotment is located in the Forest's 4A and 4F Management Areas which are managed for a variety of renewable natural resources. Primary management emphasis is on wildlife habitat improvement, livestock forage production, and dispersed recreation. In these areas, watersheds are managed for improvement to satisfactory or better condition and to benefit riparian-dependent resources. Management Area 4A includes portions of the Mazatzal Wilderness. The Forest's emphasis for this area is to "Manage for wilderness values while providing livestock grazing and recreation opportunities that are compatible with maintaining wilderness values and protecting resources (Forest Service 1985)."

The Forest's emphasis for Management Area 4F is to "Manage for a variety of renewable natural resources with primary emphasis on wildlife habitat improvement, livestock forage production, and dispersed recreation (Forest Service 1985)." Watersheds within the area are to be managed to improve them to satisfactory or better condition.

The Cedar Bench Allotment is characterized by steep slopes. Within Management Area 4A, 27.9 percent of the area is over 81 percent slope. For Management Area 4F, 4.9 percent is in the 41 to 80 percent slope category, while an additional 5.6 percent is over 81 percent slope (Forest Service 1985). Along the western and southern sides of the allotment, these slopes terminate in the Fossil Creek, Verde and East Verde River channels. These major drainage bottoms support interior deciduous riparian woodland and limited areas of mesquite bosque. Riparian vegetation on the larger drainages such as Fossil Creek and the East Verde River is characterized by a Fremont cottonwood (Populus fremontii) overstory with Scouler willow (Salix scouleri) in the low and middlestory. Arizona sycamore (Platanus

wrighti) is also present as an overstory component. However, as will be discussed, only a few trees remain along the Verde River within the allotment.

The BAE indicates that range inspections since the implementation of the AMP have noted that range condition is satisfactory and the trend is improving. These inspections are summarized as follows:

A visit on January 24, 1986, by a District Range Conservationist, who inspected upland habitat only, found that use was generally light to moderate and the trend was improving.

A visit on May 4-5, 1988, by a District Range Conservationist, which concentrated on upland habitat only, noted good groundcover by warm-season grasses. Areas of heavy use were identified, but were localized and centered around water developments. This visit also concluded that the AMP was affecting the range in a positive manner.

A May 1-2, 1989, visit by Range Conservationists again found heavy use in scattered upland locations, primarily associated with the Camp Gulch area. The majority of the range was considered to be in satisfactory condition. Use in the River Pasture was light to moderate and riparian regeneration was successful. There was evidence of beaver use and regeneration was considered better in the East Verde River than in the Verde River.

According to the BAE, visual inspections of the allotment conducted in March 1995 indicated that the majority of the range is in satisfactory condition and improving. Small areas near water developments have the highest utilization, but utilization remains below the 50 percent limit identified in the AMP for cool season grasses and browse species. The AMP also identified a limit of 40 percent utilization of cool season grasses for the River Pasture. Visual inspections by Forest staff indicated very low usage on foxtail in that area.

While range conditions are generally considered to be in satisfactory condition, a Payson Ranger District wildlife biologist noted degraded aquatic and riparian habitat along the East Verde River and at its confluence with the Verde River in April 1995. The Forest notes in the BAE that range inspections indicated favorable riparian vegetation recovery in the River Pasture prior to the floods of the 1990s and after the AMP was implemented. Photographs from 1985 of the East Verde River near its confluence with the Verde River indicate that willows were found in thickets of less than ten feet in height and in high densities. The photographs also show a mesquite bosque between the willow thickets bordering the rivers and the bluffs further inland to the east (Forest Service 1995). Bosque vegetation is also noted on National Wetland Inventory maps which are based on 1980 aerial photography. The Verde Hot Springs quadrangle of the NWI map series identifies several large patches of riparian scrub-shrub, mixed broadleaf vegetation. The Forest has approximated that 85 percent of the riparian vegetation and 75 percent of the bosque vegetation had been removed between the years of 1985 and 1995. The remaining mesquite bosque appears to correlate with flood return rates of approximately 25 years based on stratigraphy of exposed sediment and age class of the trees (Forest Service 1995).

The Forest estimates that topsoil in remaining mesquite bosque areas is approximately three feet in depth (Forest Service 1995). In contrast, the present active channel of the East Verde River just upstream of its confluence with the Verde River shows signs of bank cutting and very little fine sediment deposition. Those portions of the Verde River just upstream of the confluence alternate between bedrock, armored surfaces, and a few alluvial deposits. There are small areas vegetated with narrow bands of cottonwood, willow, and bermuda grass (*Cynodon dactylon*), but the majority of these vegetated strips are only one to two trees in width. The BAE indicated that the Forest believes high magnitude flood events are the major cause of changes in vegetation. The effects of flooding were likely exacerbated by other events in the watershed such as grazing and forest fires. The Dude and Bray fires occurred in 1990, further upstream of the proposed action area along the East Verde River. The Forest notes in the BAE that from 1985-1990, the average annual flood was exceeded on only one occasion by an event that was 33 percent greater than the average annual flood. Following the Dude and Bray fires in 1990, the average annual flood magnitude was exceeded each year. The 1993 flood, with a peak discharge of 145,000 cubic feet per second (cfs) and equivalent to a 50- to 60-year event, exceeded the average annual event by 660 percent. A second event, peaking at 106,900 cfs and equivalent to a 25- to 50-year event, occurred in January of 1995.

Regeneration of riparian vegetation was low along the lower East Verde and Verde Rivers within the allotment. Significant regeneration of the riparian vegetation near the confluence will not be possible in some areas until sufficient sediment has been deposited where there is currently a large cobble and small boulder substrate. According to the BAE (Forest Service 1995), the removal of vegetation and soils in the bosque has resulted in a cobble substrate as far as 325 feet from the present active channel of the East Verde River at the confluence with the Verde River.

In contrast to the East Verde River, vegetation in the lower one mile of Fossil Creek appears to be in an upward trend. The 1985 photographs show a limited amount of riparian vegetation comprised mainly of sycamore and cottonwood overstory with willow and thinleaf alder (Alnus tenuifolia) understory. Currently, there is a well-developed overstory of cottonwood and sycamore and small thickets of willows are developing. These willow thickets are not very dense and are limited to narrow strips approximately three feet wide. The stream channel shows evidence of recent flooding, but bank cutting is minimal, only occurring occasionally at constrictions and bends. The Forest has indicated that they believe that this high degree of bank stability is due to the root network of adjacent riparian vegetation along Fossil Creek, and the absence of those upstream watershed conditions occurring on the East Verde River watershed. Stream substrates along Fossil Creek are varied and include fine sand, gravel, cobbles, and boulders, as well as areas of bedrock pools (Forest Service 1995).

Service and Forest personnel visited the Cedar Bench Allotment on May 11-12, 1995. Generally, Service personnel observations with respect to conditions on the allotment are in agreement with those made by Forest personnel. The majority of the site visit focused

on observations along those portions of the Verde and East Verde Rivers within the allotment. The areas marked on NWI maps and identified by Forest personnel as the mesquite bosque in the 1985 aerial photographs has been reduced in total acreage. Flooding was evident in debris lines and downed vegetation. Cottonwood, willow, and sycamore were sparsely scattered throughout the area, occurring in linear strips in only two areas along the Verde River within this portion of the allotment. These linear strips were one to two trees in width. Cocklebur (*Xanthium strumarium*) and bermuda grass are the primary species in the understory. These linear strips have both slightly undercut banks and overhanging vegetation, and therefore may represent higher quality fish habitat than the remainder of the Verde River in this area.

Those portions of the Verde River and East Verde Rivers that occur within the allotment are bordered in many places by steep canyon walls with bedrock forming portions of the river channels. Alluvial deposits along the channel are lacking. Immediately upstream of the Verde/East Verde River confluence is a wide terrace that extends several hundred feet to the steep canyon walls on its east side. This area formerly supported the mesquite bosque noted in the aerial photographs and NWI maps. The second terrace rises approximately four feet in height from the east side of the Verde River within ten horizontal feet of the channel in many areas. The second terrace has very little sediment, and is covered almost entirely by cobbles and boulders. Because of the rapid change in height and the current substrate, portions of this terrace are likely unsuitable for regeneration of cottonwood and willow at this time as the height of the terrace may prohibit low flows from depositing sediment and dispersing cottonwood and willow seeds. Flow events large enough to reach the second terrace may occur at velocities that tend to scour rather than deposit sediment.

Portions of the East Verde River upstream of its confluence with the Verde River supported larger patches of cottonwoods and willows. However, these patches were isolated from one another by steep cliffs and bedrock. The majority of the vegetation in these areas is approximately 15 to 20 feet in height and little regeneration was evident. It is possible that the vegetation present was well established and able to survive recent flood events. Portions of the north bank of the last one mile of the East Verde River before its confluence with the Verde River were steep cut, with vertical banks approximately five feet in height that showed recent signs of erosion including exposed roots of mature mesquite trees and piles of loose sediment at its base. Approximately one mile upstream from the Verde River confluence, the East Verde River has a lower gradient and wider channel with scattered boulders in the channel. However, alluvial deposits are still lacking and the substrate is almost entirely large cobble.

STATUS OF THE SPECIES

Documentation prepared for the designation of critical habitat for the razorback sucker summarized much of the life history, distribution, and status information for the species (USFWS 1993). Most of the following background information was taken from that

documentation. Life history and status information on the razorback sucker can also be found in Minckley and Deacon (1991). Please refer to these sources for additional information.

The fish fauna of the Colorado River Basin, evolving in isolation from other basins and under an extensive range of physical conditions, contains many unique, endemic species. The razorback sucker is one of the larger species in the Basin, with females reaching two feet or more in length. It is also a long-lived species, with individuals reaching at least 40 years in age. The razorback sucker is distinguished from other endemic species of suckers in the Basin by the prominent, ridge-like keel along the back between the head and the dorsal fin. The razorback sucker has large, fleshy fins, small eyes, and the sub-terminal mouth characteristic of suckers.

The razorback sucker is the single species in the genus *Xyrauchen*. The taxonomy of the species was first described in Kirsch (1889) based on specimens from the Gila River near Ft. Thomas, Arizona. Until the last 50 years, the razorback sucker was widely distributed throughout the Basin, inhabiting all the major tributaries to the Colorado River as well as the mainstem.

As mentioned previously, the razorback sucker is a large, long-lived species. Evolving in the Basin, the razorback sucker is also very well adapted to exploiting the types of habitats and harsh physical conditions that characterized the Basin.

Razorback suckers are spring spawners, likely responding to the increasing water temperatures. Spawning has been observed at between 48° and 63° Fahrenheit (Tyus and Karp 1990) in the upper Basin and 52° to 71°F in the lower Basin (Minckley and Deacon 1991). Spawning habitats are often gravel or cobble bars or areas of coarse sands in less than 16 feet of water (Minckley *et al.* 1991). Razorback suckers historically spawned in both main channel and backwater habitats and spawning has been documented in water storage reservoirs in the Lower Colorado River Basin. Recovery and research efforts over the last several years have confirmed that at least in Lake Mohave, the fertilized eggs of the razorback sucker are viable and young fish are produced. However, unless measures are taken to immediately remove the young fish from the reservoir to isolated grow-out areas, the young disappear and there is no observable recruitment. Predation by native and non-native organisms and possibly a lack of appropriate food resources are the identified causes of this lack of recruitment.

The presence of non-native fish species that both prey on and compete for resources with the razorback sucker has been identified as a primary cause of population declines of this species. Changes in physical habitat resulting from human activities in the watersheds have had a significant effect, both in the types of habitats available and the changes to the biological community structure in those habitats. Suitable habitat for adult razorback suckers can include very altered habitats, such as reservoirs and canals, while the species may have been extirpated from what apparently is physically suitable habitat elsewhere.

Habitat for young of the year and juvenile razorback suckers has not been fully identified, but it is clear from the lack of recruitment throughout the Basin that there is a problem with survival of early life stages that is of primary importance to the survival of the species.

Population Dynamics

Population Size

Basin-wide, the population of razorback suckers is likely less than 50,000 individuals. Most of the known individuals are in Lake Mohave on the Colorado River between Arizona and Nevada. This population is in rapid decline since almost all of the fish are reaching the end of their life span. Efforts are underway in Lake Mohave and Lake Havasu to provide young fish to augment the existing populations and maintain the species numbers. To date, results have been promising, with some of the young fish showing up on the spawning grounds with the old adults, but the number of fish released to date is not sufficient to offset the yearly mortality.

Population Variability

The population of razorback sucker in the Basin has declined steadily over the last 50 years. Yearly population fluctuations that increase vulnerability to stochastic events are not as important in long-lived species.

Population Stability

Under normal conditions, the long life span of the razorback sucker would tend to be a stabilizing agent. Given the lack of recruitment over the last 50 years, it is only that longevity that has kept the species from going extinct. Extirpation of local populations can sometimes be charted as happening 45-50 years after formation of a reservoir, the likely result of failed recruitment due to non-native fish species.

Status and Distribution (Rangewide)

Reasons for Listing

Elimination of the razorback sucker from over half of the historic range and significant population declines in the remaining areas were the primary reasons for the listing of the species as endangered.

Rangewide Trend

Populations of the razorback sucker continue to decline. There are augmentation efforts ongoing in the Basin (largely in the Lower Basin), but these have not yet had significant success in halting this decline.

New Threats

No additional threats to the razorback sucker have been identified.

Species Likely Response to Any Proposed Actions

Numbers of Individuals/Populations in Action Area

The number of razorback suckers in the action area is not known, but is likely to be very small. Reintroductions into the Verde River drainage have been ongoing more than 10 years, but the number of individuals recaptured has been very low.

Sensitivity to Change

Because of the ability to adapt to the changing habitats historically found in the Basin, it is possible that the razorback sucker is not especially sensitive to the types of changes that would result from the proposed action.

Resilience

The degree of resiliency is not known.

Recovery Rate

Razorback suckers can, under ideal conditions, reproduce large numbers of young fish that also grow rapidly to sub-adult and adult size. However, the biological factors present in the habitat that have prevented recruitment are still in operation and this overshadows any ability of the species to recover from other disturbances.

Analysis for Status of Other Species in the Action Area

The Colorado squawfish is present in the action area under a non-essential experimental population designation. For the purposes of section 7 compliance, these non-essential experimental populations are given the same status as a species proposed for listing as threatened under the ESA. For proposed species, conference is required if a proposed action is likely to jeopardize the continued existence of the species. After an analysis of the action under consultation, the Service agrees with the Forest that the implementation of the proposed action is likely to adversely affect the Colorado squawfish, but it is not likely to jeopardize the continued existence of the species. Therefore, formal conference is not required. Implementation of protective measures for the watershed and stream conditions would likely reduce the magnitude of the adverse effects.

ENVIRONMENTAL BASELINE

The environmental baseline serves to define the current status of the listed species and its habitat to provide a measure against which to assess the effects of the action now under consultation. While the baseline must focus on the conditions in the action area, to an extent the analysis must include information on the status of the species throughout its range. Any evaluation of the effects of the action under consultation must be made in the context of the overall status of the affected species.

The environmental baseline has two components. The first is a summary of the past and present impacts of all Federal, State, and private activities in the area of the proposed action, the anticipated impacts of all proposed Federal activities in the action area that have already undergone formal or early section 7 consultation, and the impact of any State or private activities which are contemporaneous with this consultation process.

The second component is a summary of the status of the affected species throughout its range. The effects of any completed or ongoing recovery actions is included, as are conservation actions, reasonable and prudent measures, and reasonable and prudent alternatives that have been initiated as a result of completed section 7 consultations.

The Forest consulted with the Service on the Tonto NF Plan for a variety of management actions including recreation, wilderness, timber and fire management, and mineral development activities as described within the Plan. Additional detail on the types of activities in the Plan and on the consultation are available in Service file 2-21-83-F-13 and in the Tonto NF Plan.

That portion of the Verde River within the proposed project boundaries flows through the Mazatzal Wilderness Area and has been designated as a Wild River under the Wild and Scenic Rivers Act of 1968 (PL 90-542, as amended). The purpose statement of the act indicates "...that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."

The affects of the Wild River designation on willow flycatcher and razorback sucker should be positive. Because of its status as a Wild River, the Forest has proposed to manage this area to "...preserve naturally-occurring flora and fauna, scenic and wilderness qualities, archaeologic-historic, and natural ecological processes, while providing for a high quality wilderness experience (Forest Service 1993)."

Forest maps for the Tonto NF indicate that all land within the proposed action area and adjacent to Fossil Creek, the Verde River and the East Verde River are managed by the Forest, with no State or privately held lands. Within the Cedar Bench Allotment, there is

a parcel of private land in the upper elevations at Township 11 North, Range 8 East, sections 29 and 30. Impacts of management activities on this parcel of private land are unknown. The Service's computer database did not contain records for additional consultations on either the willow flycatcher or the razorback sucker within the proposed action area. One consultation (Service file 2-21-90-F-264) was completed for a timber salvage and fire rehabilitation operation upstream on the East Verde River following the Dude Fire.

As described previously, the Cedar Bench Allotment is bordered by the Deadman Allotment to the north and the Hardscrabble Allotment to the east. Management of these allotments could potentially affect the downstream portions of the Verde River flowing through the Cedar Bench Allotment. The effects of management actions within these two allotments on the Verde River in the Cedar Bench Allotment are not known at this time.

STATUS OF THE SPECIES IN THE PROJECT AREA

The razorback sucker was reintroduced into the Verde River beginning in 1981. Survival of the reintroduced individuals is not known, however, it is assumed that a small population has been established in the Verde River. The difficulty of surveying the Verde River and associated tributaries and Horseshoe Reservoir makes locating and documenting the size of the razorback population virtually infeasible. Stocking of sub-adult razorback suckers to augment the existing population continues to the present, with approximately 3,000 razorback suckers stocked into the Verde River in 1995 (Arizona Game and Fish Department, unpublished data).

The Verde River represents only a small part of the current razorback sucker population and occupied range. The area that would be affected by the proposed action is a subset of the Verde River and its tributaries. The area that would be affected by the proposed action is partially within the boundaries of the designated critical habitat on the Verde River. The Verde River and its 100-year floodplain were designated as critical habitat in 1994.

Recent section 7 consultations in the Verde River drainage have dealt with the issuance of term grazing permits and flood damage repair projects. Additional consultations on these topics are ongoing.

EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

The BAE developed by the Forest for this proposed action discussed the potential effects to the razorback sucker from the issuance of the term grazing permit for the Cedar Bench Allotment. Although the entire allotment is within the watershed of the Verde River, only one of the eleven pastures, the River Pasture, actually contains segments of the river or its tributaries. The discussion of effects of the action included in this opinion summarizes the information in the BAE and from other sources.

Action Parameters Considered

Proximity of the Action

The proposed action would take place within occupied critical habitat of the razorback sucker.

Distribution of Effects

Effects of the action would be felt within the action area and in downstream reaches of the Verde River.

Timing

Grazing in the River Pasture would only take place from mid-November to mid-March every other year. Other pastures in the watershed would be used at some time between November through May every other year. Effects to aquatic and riparian conditions that result from watershed conditions would be felt throughout the year.

Nature of the Effect

Past use of the allotment by livestock resulted in unsatisfactory conditions on the watershed and in the riparian areas. Implementation of the AMP has resulted in improvements to range condition. High water events of the last five years have made improvements to the riparian conditions difficult to analyze.

Livestock grazing has several direct and indirect effects on fish and aquatic habitats. Effects to the watershed that alter runoff patterns and amounts will influence streamflows, channel conditions, bank stabilization, and substrates. Actual grazing in riparian/aquatic areas can reduce bankside vegetation, compact soils, cause hoof shearing on steep banks, alter nutrient loading into the system, and physically disturb adult fish or affect eggs, larvae or juvenile fish. Habitat diversity and stability decrease as watershed and riparian conditions decline.

The topography of the River Pasture results in livestock being able to access the banks of the Verde River, Fossil Creek, and the East Verde River. Of these areas, only Fossil Creek has an improving riparian condition. Conditions along the East Verde and the Verde Rivers are not improving, however, there are other processes at work that explain this lack of recovery. High water events, especially in January 1993, removed significant amount of riparian regrowth. High levels of precipitation, cumulative and baseline effects on the watershed, and large-scale fire incidents contribute to the flow patterns that have adversely affected the riparian areas. It is difficult in this circumstance to separate out the effects of livestock use on the Cedar Bench Allotment from these other intertwined uses. It should be noted that this does not imply that effects to the watershed from grazing are not significant, but rather that defining them is difficult.

It is possible to address in more detail the effects to the River Pasture specifically. Use in the winter-spring period allows for growth of grasses and forbs during the summer and fall. Growth of riparian vegetation is also allowed and since these species are dormant during most of the grazing season, there may be limited effects to these plants. That the grazing use is not every year also permits the plants a full year to grow largely unmolested. Use of the pasture in the winter-spring also reduces the need for livestock to stay around water sources because of heat or insects. This promotes better spacing of animals across the allotment which reduces grazing pressure and physical effects in any one area.

There is also the possibility that individual razorback suckers may be directly affected by the presence of livestock along the Verde River and its tributaries. The cattle are in the River Pasture during the spawning period of the razorback sucker. Spawning adults, eggs or larvae could be affected by cattle in the shallow waters along the river banks. There has been sufficient time for stocked razorback suckers to reach maturity in the system.

Duration

Although the grazing period is from November to May, some effects of the grazing to stream courses and watersheds can be felt year round and others are seasonal.

Disturbance Frequency

Grazing on the River Pasture would take place every other year. Grazing on the allotment as a whole would take place yearly.

Disturbance Intensity

Given the limited area affected, the intensity of the disturbance is not likely to be high. Use of the River Pasture is restricted to 12,000 cattle-days. It must be remembered that there are many actions taking place on the watershed that have intermingled effects to the Verde River in the project area.

Disturbance Severity

It is not possible to quantify the specific level of disturbance resulting from this action in light of the other intermingled effects of past and ongoing actions on the watershed.

Analysis for Effects of the Action

Direct Effects

Direct effects of the action on the razorback sucker include potential disturbance to spawning fish and spawning habitat, mechanical damage to streambanks, alteration of

nutrient loads in the system, and removal or reduction in the amount of riparian and upland vegetation that could influence flows in the river.

Indirect Effects

Indirect effects of the action on the razorback sucker include changes to the watershed and the river that result from the long term commitment to allow livestock grazing on the allotment.

Interrelated/Interdependent Effects

The decision to continue to allow livestock use on the allotment requires that roads and fences in and accessing the allotment be maintained. Roads are of special concern since they are often contributors of sediment to stream courses, and allow access to the area for other than the rancher. As noted under the project description, access to the site is via Forest Route 194, which is a four-wheel drive road that ends at the private property in the upper elevations of the allotment. From that point, only Forest Trails provide access to Fossil Creek and the Verde and East Verde Rivers, and these trails are unsuitable for motorized vehicles. The AMP does not propose upgrading or maintenance of these roads. Therefore, adverse effects from roads are anticipated to be minimal.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future State or private activities that have no Federal connection, and that are reasonably certain to occur within the action area of the Federal action subject to consultation. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Projects without a Federal nexus may require section 10(a) permits (Habitat Conservation Plans) to comply with section 9 of the ESA.

Although the land area surrounding and including the action area is largely Federal land, the river and its water, and flows in the East Verde River and through Fossil Creek are to some measure controlled by non-Federal entities. These are ongoing actions and thus are not considered cumulative. However, they do provide insight into the types of future actions that could occur in the action area. Water diversions and urban development are likely to result in changes to the river and its tributaries through the action area.

CONCLUSION

After reviewing the current status of the razorback sucker, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the issuance of a term grazing permit on the Cedar Bench Allotment, as proposed, is not likely to jeopardize the continued existence of the razorback sucker and is not likely to destroy or adversely modify designated critical habitat.

INCIDENTAL TAKE

Sections 4(d) and 9 of the ESA, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The agency has a continuing duty to regulate the activity covered by this incidental take statement. If the agency (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

AMOUNT OR EXTENT OF TAKE

The take resulting from the implementation of the proposed action involves both harassment (effects to the individual fish) and harm (effects to their habitats that prevent or reduce the ability of the habitat to support individuals). Because of the small size of the razorback sucker population in the Verde River, it is not possible to clearly define the extent of take to individuals that could result. Similarly, the portion of effects to razorback sucker habitat that can be attributed to this proposed action is difficult to define. There would be some disturbance to riparian vegetation, mechanical/physical effects to streambanks, and changes in nutrient loading and in runoff from the watershed that could affect habitat conditions in the Verde River. These effects would mostly occur within the proposed action area, however, some effects also may occur in downstream reaches of the river.

Because the incidental take associated with this proposed action is so difficult to detect and define, a surrogate measure, related to the type of take that has been identified for this proposed action, must be described. The Service concludes that the level of incidental take from the proposed action will be considered to be exceeded if riparian recovery is halted or significantly retarded by livestock use of the riparian zone. Recovery can be achieved

through: (1) light browsing on woody species, where browsing on apical stems of riparian seedlings does not exceed 40 percent; (2) low utilization of herbaceous vegetation where utilization of key herbaceous species in the riparian zone does not exceed 40 percent, and; (3) minimal bank instability, where up to or less than 20 percent of the streambank is in unstable condition.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the razorback sucker:

1. Measures will be taken to monitor the livestock use of the riparian areas of the River Pasture.

2. If monitoring demonstrates that livestock are congregating excessively in the riparian areas of the River Pasture, measures will be taken to reduce or eliminate livestock use of these areas.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Forest must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions are necessary to implement reasonable and prudent measure 1:

a. During the time the livestock are in the River Pasture, a periodic inspection of the riparian areas will be conducted to determine if livestock are in these areas. This inspection must be completed at least three times during the season of use.

b. At the end of the season of use for the River Pasture, the riparian areas will be inspected for signs of livestock use of the vegetation and for mechanical/physical damage to streambanks caused by livestock use using standard methods.

The following term and condition is necessary to implement reasonable and prudent measure 2:

a. If the monitoring shows excessive use of the riparian areas by livestock, access to these areas will be further restricted. The Forest may select the most effective way to accomplish this, either through herding, construction of new fences, or any other means suitable to achieve the desired result.

CONFERENCE REPORT

As previously discussed under Analysis for Status of Other Species in the Action Area, the Colorado squawfish is present in the action area under a non-essential experimental population designation. For the purposes of section 7 compliance, these non-essential experimental populations are given the same status as a species proposed for listing as threatened under the ESA. For proposed species, conference is required if a proposed action is likely to jeopardize the continued existence of the species. However, the Service agrees with the Forest that the implementation of the proposed action is likely to adversely affect the Colorado squawfish, but it is not likely to jeopardize the continued existence of the species. Therefore, formal conference is not required.

CONCURRENCES

As previously discussed, the issuance of a grazing permit for the Cedar Bench Allotment is subject to the provisions of the programmatic BAE, including the Regional Director's concurrence and the Forest does not need further concurrence with determinations of no effect or may affect, not likely to adversely affect when criteria within the programmatic BAE are met. The Forest determined that issuance of the grazing permit for the Cedar Bench Allotment would have no affect on bald eagle, peregrine falcon, Mexican spotted owl or its critical habitat, Arizona agave, or Arizona cliffrose. The Forest also determined that the proposed action may affect but was not likely to adversely affect willow flycatcher or its proposed critical habitat.

While no concurrence is required, the Service has conducted an analysis of the proposed action and potential implications to the species. We are providing elaboration on our concurrence with the determination of may affect, not likely to adversely affect for the willow flycatcher. Following review of all project information, the Service has concluded that the steep canyons, bedrock, and linear nature of alluvial deposits may reduce the suitability of this site for use by willow flycatchers. In addition, because grazing would occur between mid-November and mid-March of every other year, cattle would not be present during the breeding season, nor would they be present during the growing season for riparian vegetation. The entire pasture would receive more than approximately 19 months of rest from March of each even-numbered year through November of the following odd-numbered year. Should sediment deposition occur in a way that would allow for regeneration or riparian vegetation in this area, the Service believes that grazing would be managed in a way that would allow for vegetation to eventually mature into suitable willow

flycatcher habitat. However, it is also possible that repeated flooding similar to that has been experienced since 1985 will continue to eradicate regenerating riparian vegetation.

CONSERVATION RECOMMENDATIONS

Sections 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service offers the following conservation recommendations for your consideration:

1. The Forest monitor the recovery of riparian vegetation in the proposed action area and if necessary develop restoration plans to encourage regeneration.

2. The Forest contribute to the monitoring effort for razorback suckers, especially during the spring spawning period when individuals are more likely to be in shallow waters.

3. The Forest conduct a comprehensive evaluation and section 7 consultation on the effects to listed species from livestock grazing and livestock grazing management on Forest lands within the Verde River drainage basin above the allotment. Separate analysis of each grazing allotment within the watershed fails to consider many of the cumulative and synergistic effects of the total grazing within the upper drainage. A comprehensive, or ecosystem, approach for the upper drainage would allow a better and more inclusive analysis of the total effects of grazing and its management on the listed species of the upper drainage. A comprehensive approach would provide opportunities for listed species protection and recovery that are not possible under the reductionist approach of single allotment management.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION AND CLOSING STATEMENT

This concludes formal consultation on range permit issuance for the Cedar Bench Allotment as outlined in your request for consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent

of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In future communications on this project, please refer to consultation number 2-21-95-F-291. If there are any questions about this biological opinion, please contact Lesley Fitzpatrick, Mary Richardson, or Bruce Palmer.

Sincerely,

FOR Sam F. Spiller
State Supervisor

cc: Regional Director, Fish and Wildlife Service, Region 2, Albuquerque, NM (AES)
Regional Forester, U.S. Forest Service, Region 3, Albuquerque, NM
Director, Arizona Game and Fish Department, Phoenix, AZ

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